

**Supporting Information for
“Wind-forced symmetric instability at a transient mid-ocean front”**

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1. Figures S1 and S4

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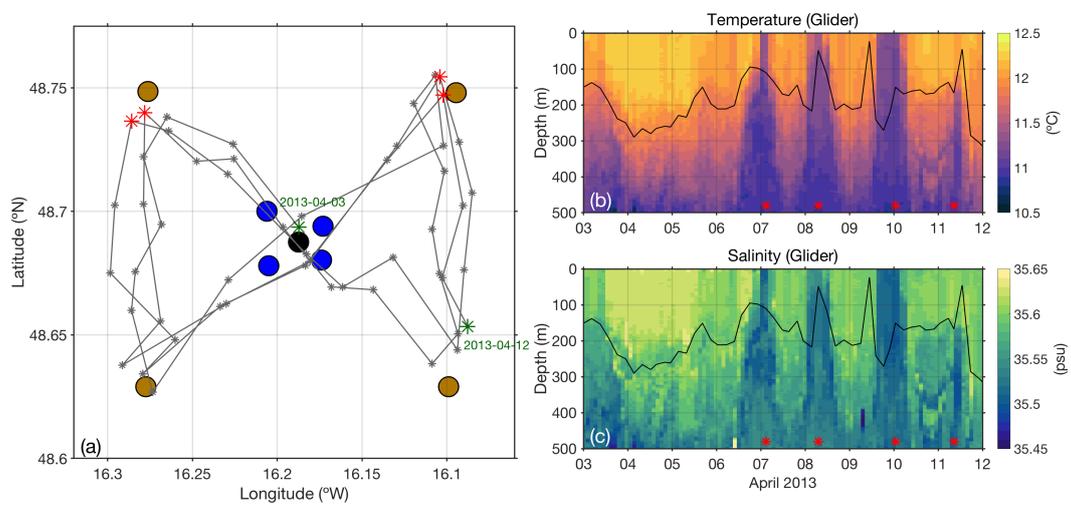


Figure S1: (a) Locations of the central mooring (black), four inner moorings (blue), and four outer moorings (dark yellow), with glider trajectories from 3 to 12 April 2013. Time series of (b) temperature and (c) salinity measured by the gliders from 3 to 12 April 2013. The black line indicates the mixed layer depth. The red asterisks in (b-c) match with glider locations in (a).

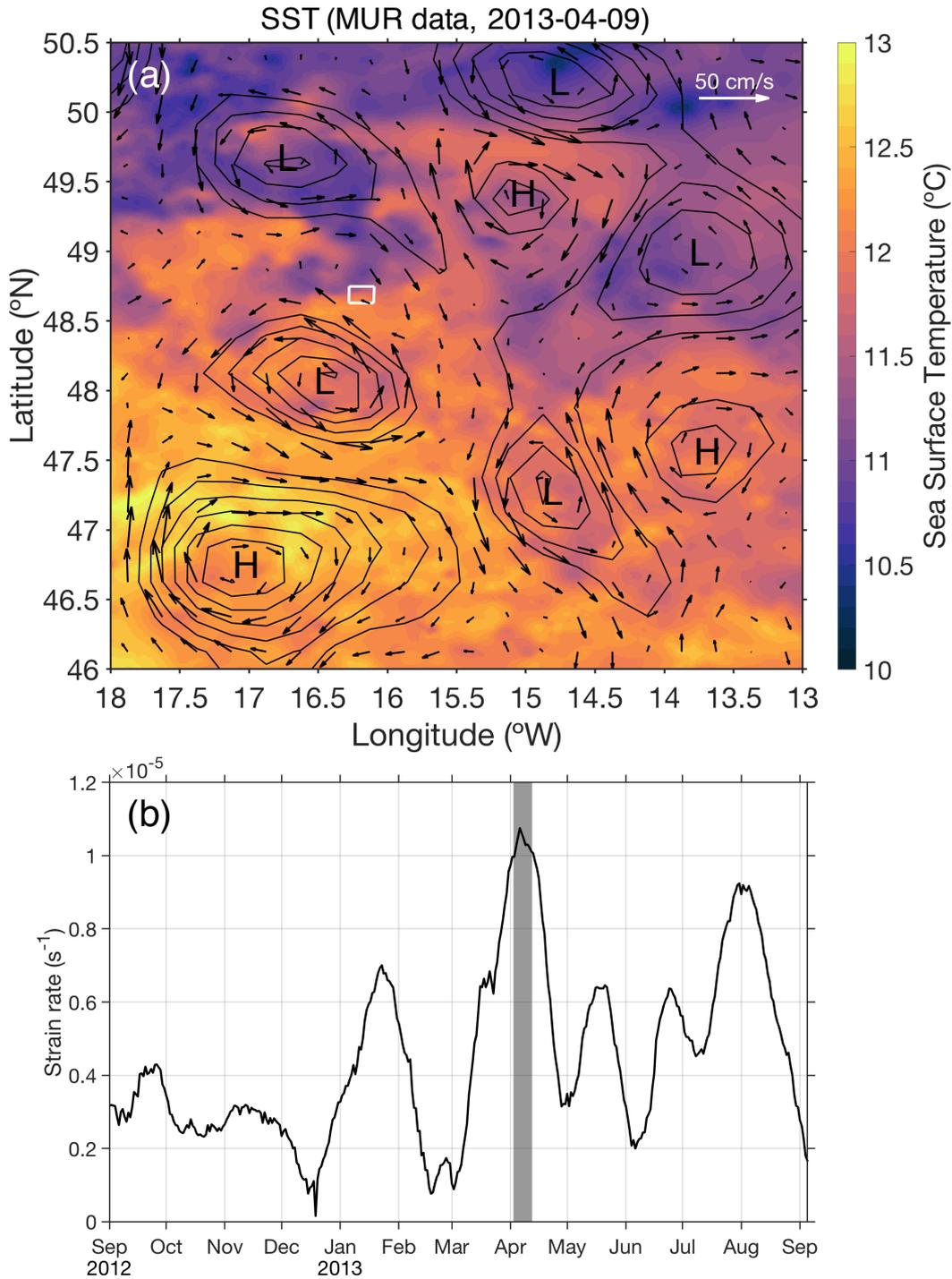


Figure S2: (a) Snapshot of MUR SST for the OSMOSIS observational area on 9 April 2013, with AVISO SSH shown as contours (0.04-m interval, ranging from -0.2 to 0.2 m) and surface geostrophic current velocity shown as black vectors. The white box indicates the location of the OSMOSIS measurement area. L and H mark low and high-pressure centers, respectively. SST data are obtained from the GHRSSST (Group for High Resolution Sea Surface Temperature) level-4 Multiscale Ultrahigh Resolution (MUR) global analysis. Sea level anomaly and surface geostrophic velocity data are obtained from the delayed-time gridded $0.25^{\circ} \times 0.25^{\circ}$ AVISO (Archiving, Validation and Interpretation of Satellite Oceanographic Data) product. (b) Year-long time series of AVISO-derived strain rate at the central mooring site between September 2012 and September 2013. The strain rate is defined as $\alpha = [(\frac{\partial u}{\partial x} - \frac{\partial v}{\partial y})^2 + (\frac{\partial u}{\partial y} + \frac{\partial v}{\partial x})^2]^{1/2}$. The grey shading in (b) indicates time period from 3 to 12 April 2013.

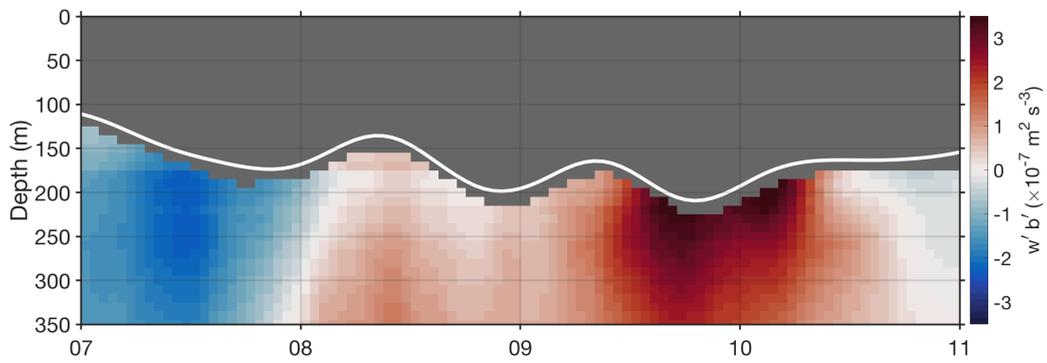


Figure S3: Time series of vertical buoyancy flux during the frontal event. The white line indicates the mixed layer depth. Vertical velocity, w , is inferred using the non-diffusive density equation (valid only below the base of the mixed layer) from the inner cluster measurements (Yu et al., 2019). The primes denote deviations from the running mean of 3-12 April. Our analysis is insensitive to the width of time window.

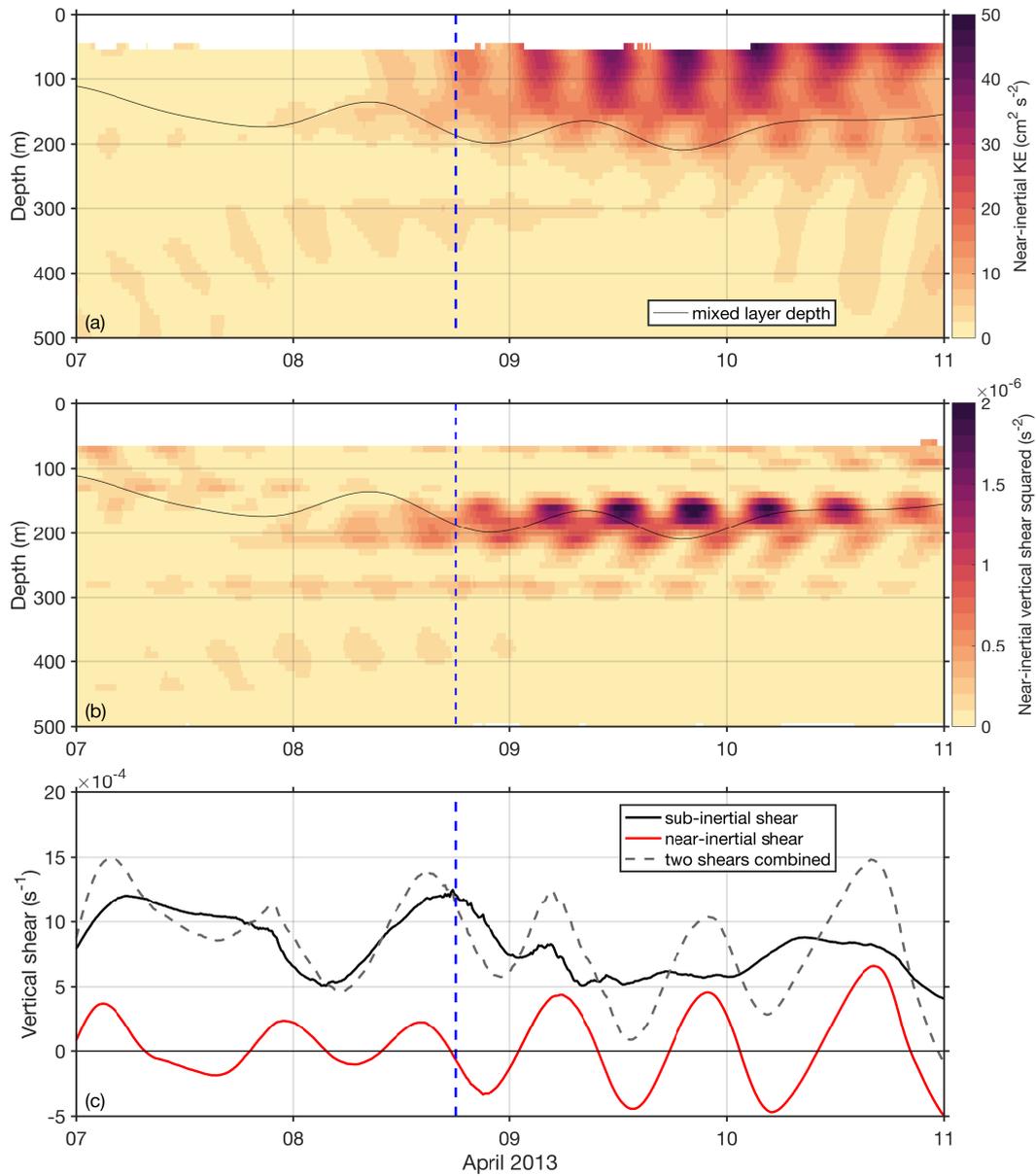


Figure S4: Time series of (a) near-inertial kinetic energy, (b) near-inertial vertical shear squared and (c) vertical shear in the down-front direction at 150-m depth from 7 to 11 April 2013. The vertical dashed blue lines correspond to the time when the Ekman buoyancy flux is largest. Near-inertial motions are defined as the velocity in the frequency band of $(0.8, 1.2)f$.